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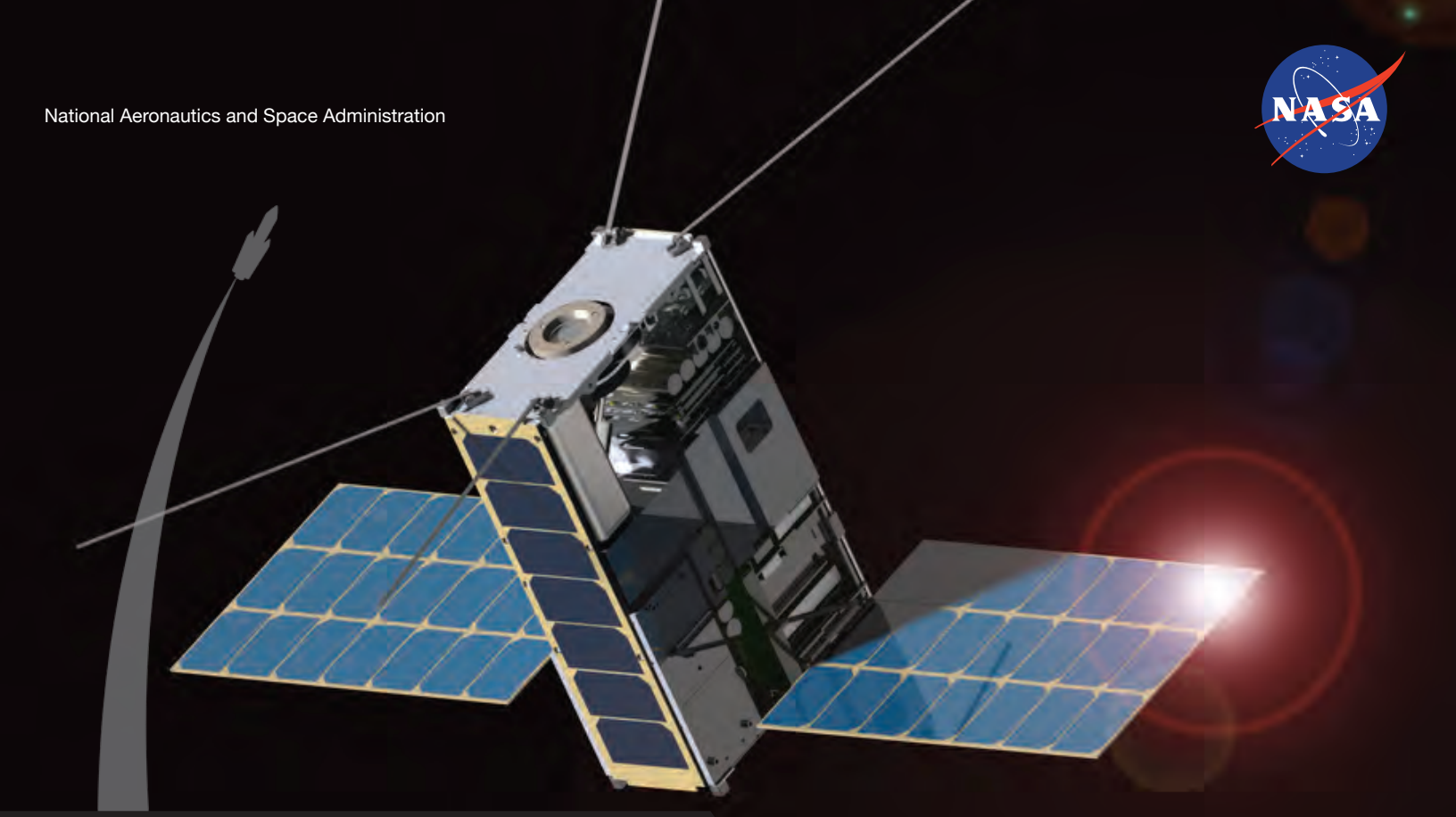
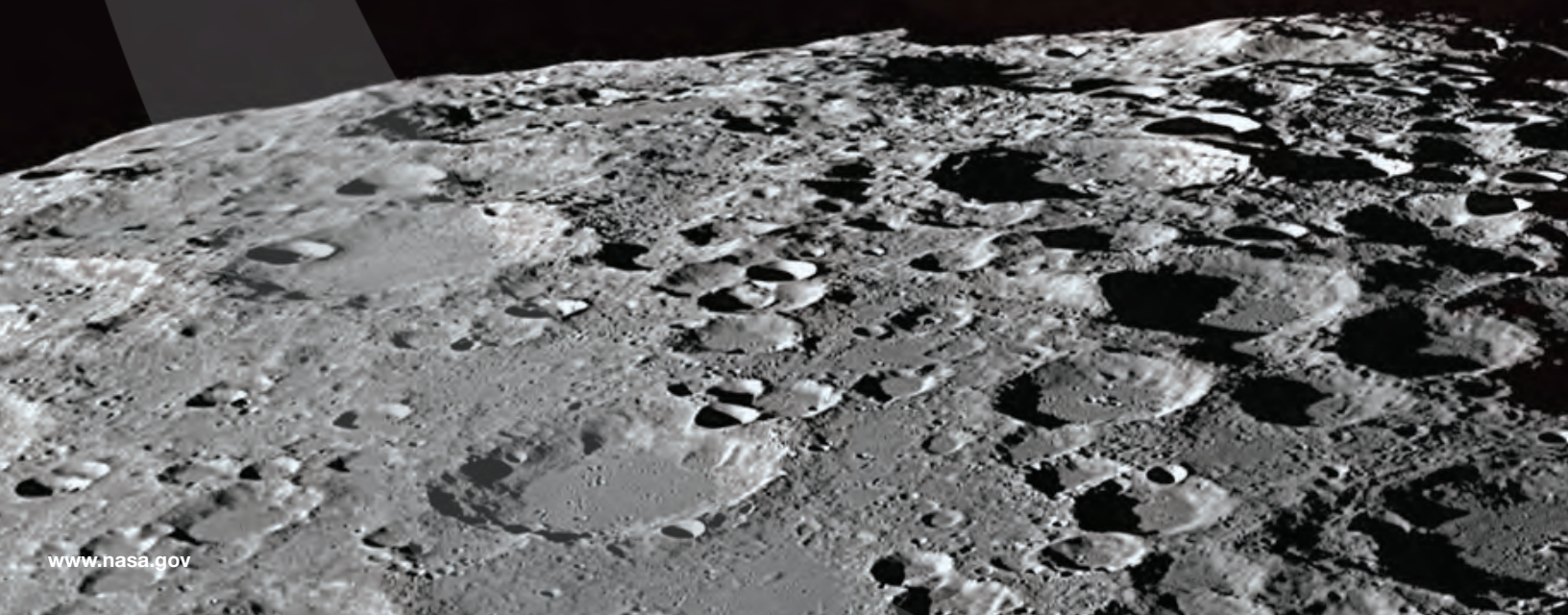


FEBRUARY 2016

SPACE LAUNCH SYSTEM HIGHLIGHTS

LUCKY 13

CubeSats selected for first flight of SLS



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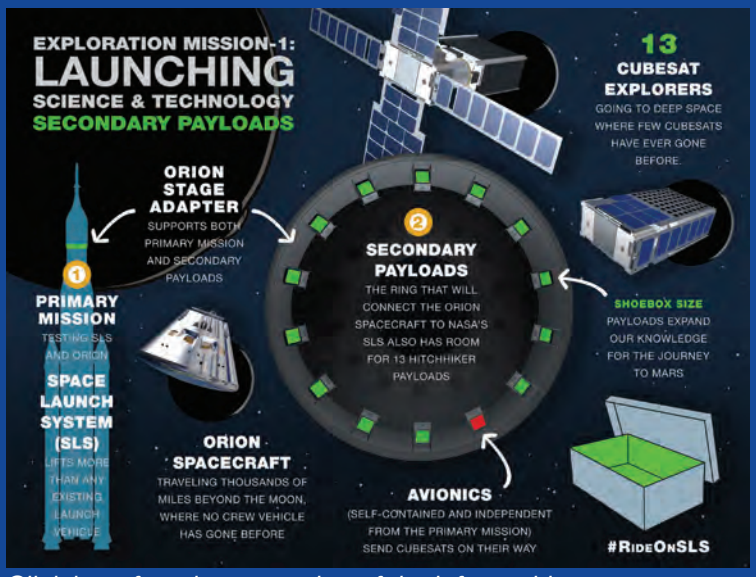
NASA SLS SAVING SEATS ON FIRST FLIGHT FOR SCI-TECH SATELLITES

The first flight of SLS will carry 13 CubeSats to test innovative ideas along with an uncrewed Orion spacecraft in 2018. These small satellite secondary payloads will carry science and technology investigations to help pave the way for future human exploration in deep space, including the journey to Mars. SLS' first flight, referred to as Exploration Mission-1 (EM-1), provides the rare opportunity for these small experiments to reach deep space destinations, as most launch opportunities for CubeSats are limited to low-Earth orbit.

The secondary payloads were selected through a series of announcements of flight opportunities, a NASA challenge and negotiations with NASA's international partners. NASA made the announcement Feb. 2 during a live press conference at the Marshall Space Flight Center in Huntsville, Alabama. Stories on the payloads appeared in a number of news outlets, including Popular Science, The Verge and The Christian Science Monitor.

> ***The 13 CubeSats that will fly to deep space as secondary payloads aboard SLS on EM-1 showcase the intersection of science and technology, and advance our journey to Mars.***
>
> *— Dava Newman*



Click here for a larger version of the infographic.

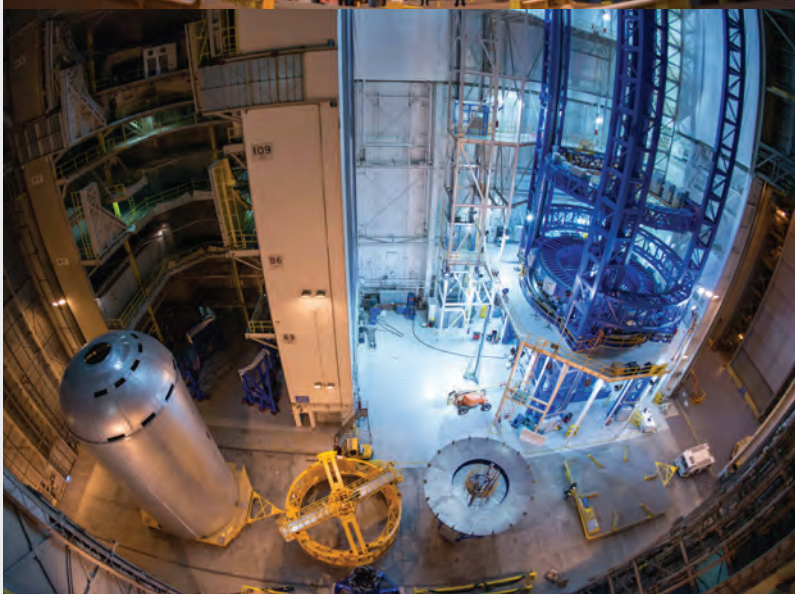
NASA Deputy Administrator Dava Newman at Marshall's secondary payloads media event.

Participating on the secondary payloads panel are, from left, Dava Newman, NASA Deputy Administrator; Bill Hill, deputy associate administrator of Exploration Systems Development; Michael Seablom, chief technologist for NASA's Science Mission Directorate; Jim Cockrell, Cube Quest program administrator in NASA's Space Technology Mission Directorate; and Jitendra Joshi, technology integration lead for NASA's Advanced Exploration Systems Division.

Chris Crumbly, manager of the SLS Spacecraft/Payload Integration and Evolution Office, explains how the Orion stage adapter will carry the 13 CubeSats to space.

TOOLS AND TALENT AT MICHOUD TO COMPLETE SLS CORE STAGE WELDING IN 2016

This will be a pinnacle year for NASA's Michoud Assembly Facility in New Orleans, as all welding for the structural backbone of SLS, the core stage, will be completed this summer in preparation for its first flight in 2018. The hardware being welded at Michoud will include confidence, qualification and flight components of the core stage. "Completing all core stage welding will be a huge milestone for our team," said Pat Whipps, SLS resident manager at Michoud. "It is something we've been working hard toward here at Michoud, and we are excited to move on to integration and other next steps in building the core stage to be ready for the first flight of SLS." Read the full story.



TOP-RIGHT: *An engine section weld confidence article is taken off the Vertical Assembly Center at Michoud.*

BOTTOM-RIGHT: *A liquid hydrogen tank weld confidence article, left, for the SLS core stage recently was completed on the Vertical Assembly Center at Michoud.*

SPACEFLIGHT PARTNERS: PARKER HANNIFIN

EDITOR'S NOTE: Every month, SLS Highlights turns the spotlight on one of the many industry partners helping to create the world's most powerful rocket ever built for human space exploration. In this issue, we profile Parker Hannifin of Cleveland.

3 O-Ring GROUP 6

For more than 25 years, the Parker Hannifin O-Ring Division has worked with Orbital ATK and NASA to consistently supply quality O-rings, meeting stringent aerospace and design requirements.

NASA is currently developing the SLS heavy-lift vehicle, which will launch the Orion spacecraft and cargo on missions requiring unprecedented lift capability. SLS will enable astronauts to travel and explore deeper into our solar system, reaching destinations farther than humans have ever gone.

Parker O-Ring Division supplies large O-rings to Orbital ATK for the SLS boosters, in addition to numerous O-rings for the Orion launch abort system.

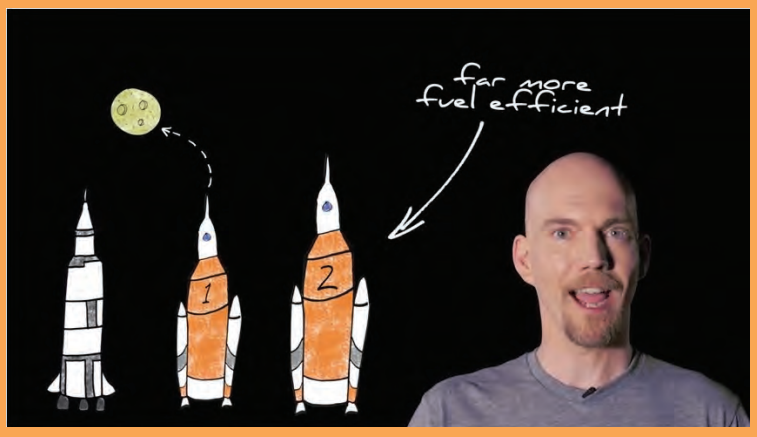
Parker O-Ring Division manufactured and supplied O-rings for the first three SLS demonstration motors, as well as the two booster qualification motors, known as QM-1 and QM-2. QM-1 was successfully test fired earlier this year, and QM-2 is on track for its ground test this summer.

THE MAKING OF A MOCKUP: WORK BEGINS ON NASA SLS CORE STAGE PATHFINDER

Major work is beginning in three Alabama communities on a 213-foot, 230,000-pound simulation of the core stage of the SLS. The steel mockup, designed by engineers at the Marshall Center, will demonstrate core stage operations and transportation, including routes for testing, assembly and launch. “This hardware is an excellent proving ground for the core stage -- from manufacturing and assembly to the launch site,” said Shane Carpenter, engineering lead on the core stage pathfinder project at Marshall. “We don’t want the first time we transport the core stage to be with flight hardware. That’s why having a pathfinder is critical to the program.” Read the full story.

Watch an animation showing how the pathfinder will be placed vertically in the B-2 test stand at NASA’s Stennis Space Center near Bay St. Louis, Mississippi. The test stand is being completely refurbished for core stage testing in 2017, and the pathfinder will be used to ensure all modifications made to that test stand meet SLS core stage specifications.

NO SMALL STEPS EPISODE 2: *A FOUNDATION FOR MARS*



The *second installment* of this video series discusses how SLS builds on the foundation of the Saturn V and the space shuttle, and uses that foundation to create a rocket that will send humans to the Red Planet. Host Stephen Granade continues to explore how this rocket will be the most capable ever built for deep space destinations. Miss the first episode on getting to Mars? Watch it *here*.

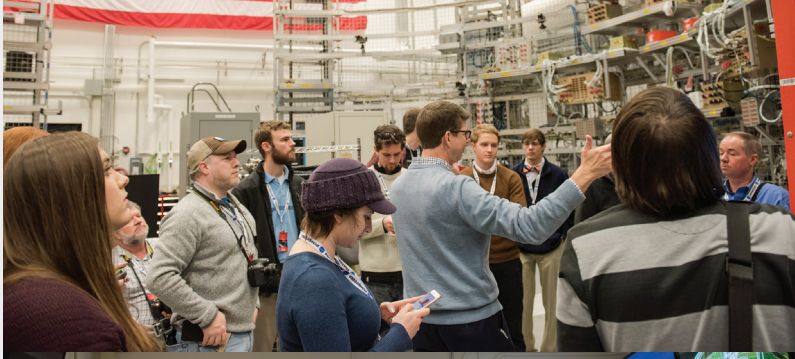
MEDIA, SOCIAL MEDIA USERS TAKE PART IN 'STATE OF NASA' AT MARSHALL

Members of the news media and 20 social media users visited the Marshall Center on Feb. 9 for "State of NASA" events, which were held across NASA's 10 field centers to discuss what the FY17 budget proposal means to the agency and highlight cutting-edge work happening in support of SLS, the journey to Mars, and other agency missions and programs. The NASA Social group "tweeted" and "shared" their experiences while on a tour of several Marshall facilities, where critical work is taking place in building the SLS rocket. Read NASA Administrator Charles Bolden's "State of NASA" address.

TOP-RIGHT: *The social group learns more about the lab where the SLS avionics system is tested at Marshall.*

MIDDLE-RIGHT: *Flight simulations in action for SLS.*

BOTTOM-RIGHT: *The NASA social group taking in the view from a Saturn V test stand, with one of the new SLS test stands under construction on the horizon.*



'STATE OF NASA' SOCIAL SNAPSHOT

#StateOfNASA trended throughout the day in the United States on Twitter.

U.S. SEN. BILL NELSON VIEWS SLS PROGRESS AT MARSHALL

U.S. Sen. Bill Nelson of Florida, right, listens as Andy Schorr, assistant manager for Spacecraft/ Payload Integration and Evolution, explains the progress on SLS during a visit to the Marshall Center on Feb. 12. The senator was given a detailed description of how the Marshall team tests avionics systems, flight software and hardware. No stranger to human spaceflight, Nelson flew as a payload specialist aboard space shuttle Columbia during the STS-61C mission in 1986.

'ENGINEERING CAN BE FUN!'

"Engineering can be fun!" said SLS's Kimberly Robinson to a group of high school girls attending the Tennessee Women in Science, Technology, Engineering & Research (TWISTER) event Feb.13 at the Adventure Science Center in Nashville. Throughout the day, the girls participated in sessions on different science, technology, engineering and math (STEM) topics, presented by women, like Robinson, working in STEM professions.

FOLLOW THE PROGRESS OF NASA'S NEW LAUNCH VEHICLE FOR DEEP SPACE:

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